

AVID Industrial Model RFID Reader

User's manual

covers the following models:

FCC ID: IOL-125-AV1015 (6" Coil System)

FCC ID: IOL-125-AV1016 (12" Coil System)

FCC ID: IOL-125-AV1017 (24" Coil System)

The device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

WARNING: This equipment has been tested and found to comply with the limits for Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause interference to radio communications. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the User is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a different circuit from that to which the receiver is connected.
- Consult the Dealer or an experienced Radio/TV Technician for help.

The User is cautioned that changes and modifications made to the equipment without the approval of the manufacturer could void the user's authority to operate this equipment.

For information call:

Within USA..... 1(800) 336-2843
Outside USA..... +1(951) 371-7505
Fax..... +1(951) 737-8967
sales@AvidID.com

**3185 Hamner Avenue
Norco, California
USA, 92860
www.AvidID.com**

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AVID Industrial Reader – Operating Manual

1. Introduction

The AVID Industrial Reader is a stationary mounted reader for identifying AVID, FECAVA and EUROCODE radio frequency ID tags. It is capable of driving large custom-built antennae and is available as a standard unit with either a 6", 12" or 24" circular coil antenna system.

The AVID Industrial Reader is ideal for various types of field or fixed industrial environments where unattended monitoring is required. All the data collected is sent out through the RS-232 serial interface. Encased in the optional NEMA enclosure, the reader is weather resistant, waterproof, and chemical resistant. All cables and wires exit the enclosure through water resistant cable clamps.

Depending on the size of the antenna selected and the size of the transponder (tag) used, reading distances of approximately 6" to 48" can be achieved. Results may vary depending on environmental conditions and proper tuning of the antenna. I.e. Proximity of antenna to metal, etc.

2.1 Power Requirements

The reader requires a 12 – 18V DC supply. This can be supplied through a 12V car or motorcycle battery, the batteries can be recharged through optional solar panels or a standard battery charger. The reader can also be powered by a Class II wall plug-in transformer, either with a 110V or 220V AC input. The current requirements are as follows:

1. 6" Coil system: 400mA
2. 12" Coil system: 700mA
3. 24" Coil system: 1A

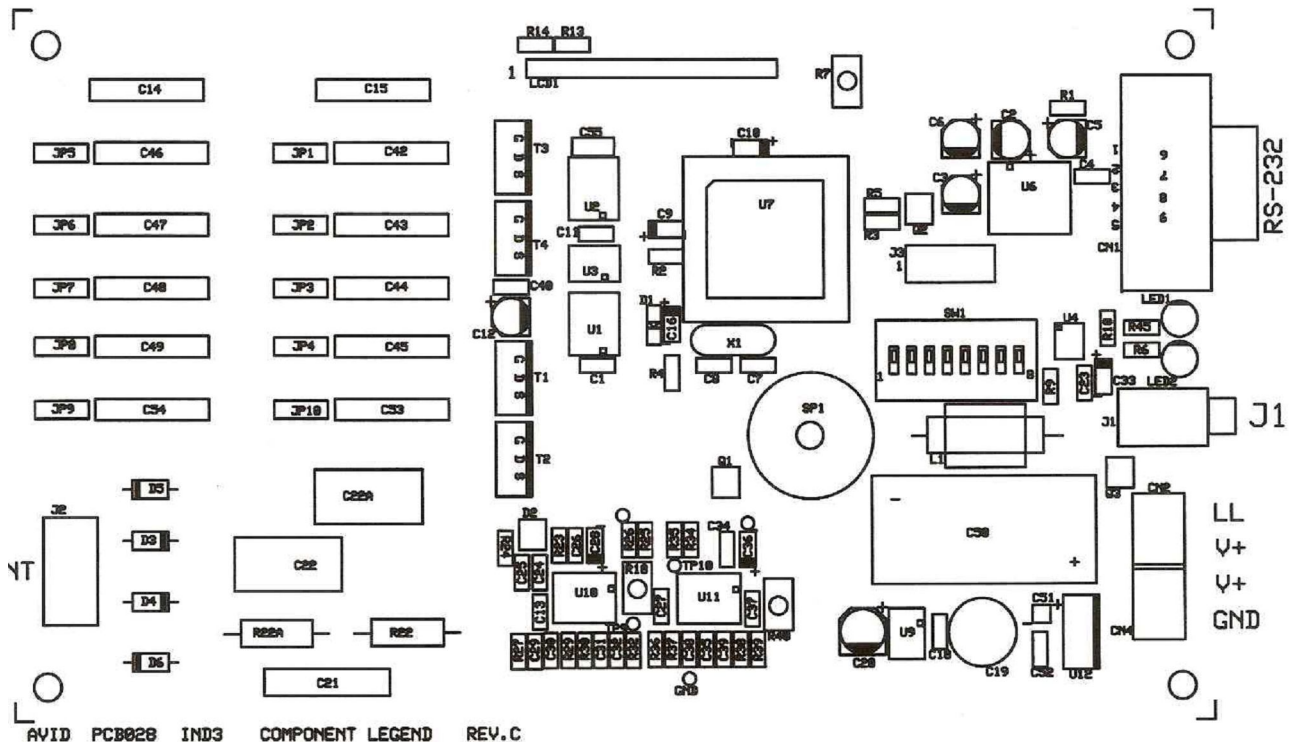
The above are current requirements for the reader while it is in the READ mode with the coil energized. Quiescent current for all three readers in the stand-by mode is approx. 25mA.

2.2 Read Switch

While the reader is usually operated in the "Continuous Read" mode, it can also be manually triggered into the READ mode with an optional external push button switch. This would plug into J1 (see Figure 1), a 3.5mm sub-miniature phone jack. The reader is triggered into the READ mode as long as the button is held down. If the button is released before, an ID tag is found, the LCD display will show: NO ID FOUND. This information is also sent out the serial port to the host computer.

If an ID tag is found, the results will be displayed on the LCD and sent out on the serial port. When a tag is found, the reader also turns off the antenna. To start the READ process again, the button must be released and held down again until the next tag is found. The reader can also be controlled by software and can be re-triggered by the host computer to start the next READ cycle.

Figure 1



2.3 LCD Display

The reader can be supplied with an optional 16 character by one line display to allow for attended monitoring. The NEMA enclosure will then be supplied with a clear lid to allow the display to be seen from the outside of the enclosure.

2.4 Read Antenna

The READ ANTENNA is the interface between the reader and the ID tag. The READ ANTENNA emits a low frequency electromagnetic radio frequency signal to activate the ID tag. Antennae are available in three standard sizes: 6", 12" and 24". The read range of the ID tag will increase as you increase the size of the antenna, as will increasing the ID tag pick-up coil.

2.5 Logic Level Output

The reader also supplies a logic level output state change after each valid tag READ. This output is an open collector type and is available at the 4 pin terminal strip. (See Figure 1). The output is normally high and goes low after a valid tag READ for a duration of 30mS. This output can be used to drive a relay or other device for the purpose of controlling a gate or diverter. There is an extra 12V (V+) connection available at the 4-pin terminal for this purpose. Wire the coil of the relay between the LL output and the 12v (V+) output on the terminal strip. (See Figure 1).

2.6 PC Interface

Using the PC interface, you can interface the reader to any PC with an RS-232 serial port. The reader is supplied with a 6 foot cable with a Female DB-9 port. The reader will plug directly into a PC without needing a Null Modem Adapter. All the reader text strings and ID numbers that would appear on the LCD display are also sent out of the serial communications port. All the strings sent are followed by a Carriage-Return/Line Feed. You may add an additional

length of cable to the PC side by installing a straight-thru male to female DB-9 cable. The RS-232 pin-out is listed below in Table 1 .

TABLE 1. RS-232 Serial Cable Pin Assignment

<u>Signal</u>	<u>DB-9 Pin #</u>
TXD	2
RXD	3
GND	5
DSR	6

2.7 Power-On Defaults/Dip-Switch Settings

When power is applied to the AVID Industrial Reader, the LCD display will come on, and display **AVID ID READY**, and immediately goes into the **LOOKING** mode. Depending on the position of the Dip-Switch settings of SW1, the reader will default to the following mode:

SW1 On – Continuous Read		Off - Read Once and stop			
SW2	On – A123456789	Off – AVID123*456*789			
SW3	On – Beep On	Off - Beep Off			
	Baud Rate	<u>2400</u>	<u>9600</u>	<u>19200</u>	<u>57600</u>
SW4		Off	On	Off	On
SW5		Off	Off	On	On
SW6	On – LCD Installed	Off – LCD NOT installed			
SW7	On – LED Enabled	Off - LED NOT enabled			
SW8	On – Report tag departures	Off – do NOT report tag departures			

*Note: if LCD is not installed, SW6 **MUST** be in **OFF** position

3.1 Interference from RF Sources & Metal Objects

The AVID Industrial Reader senses variations in electromagnetic fields in order to read ID signals from the ID tags. Computer terminals, video screens and metal can reduce the read range of the reader. If you are experiencing a decrease in reading distance, the reader is probably being affected by electromagnetic interference. Try moving locations or move the interfering equipment away from the reader.

Metal objects placed near or in the electromagnetic field will tend to de-tune the antenna and will at the same time “soak” up some of the field, thereby decreasing your read range.

3.2 LCD Screens

The **LCD** displays the following messages when searching for an ID tag:

“ AVID ID READY ”	Displays when reader is first turned ON and battery is OK.
“ LOOKING ”	Displays when seeking an ID tag.

"SCAN STOPPED"	Displays after termination of "LOOKING" when no valid ID tag is read.
"LOW BATTERY"	Displays when low battery is sensed, either when the unit is switched ON or instead of "LOOKING" when the READ Switch is depressed.
AVID*123*456*789	Sample display for a valid AVID ID tag.

4.1 Command Set

The reader serial port runs with the following configuration:
9600 baud, 8 bit, no parity, 1 stop bit (N, 8, 1)

NOTE: Commands issued over the serial port will over-ride the Dip-Switch default settings and will remain in that mode until a new command is issued or the reader is turned off and re-powered.

Commands to start and stop the reader.

S Start scan
T Stop scan

Commands to control whether the reader keeps reading after a valid read.

m enter read once and stop mode
M enter read many times mode

Commands to control the field activation characteristics.

A enter continuous field mode
P###,### enter pulsed field mode. First number is 0-255 on time.
Second number is 0-255 off time. Use 3 digits. eg. 001,
012, 100
Numbers are in decimal. Any error aborts command.

Beeper control commands.

B enable beep
b disable beep
3 minute beep on
\$ 3 minute beep off

Tag protocol control commands

U seeker mode -- read AVID and FECAVA (IDI) coded tags
u non-seeker mode -- read only AVID coded tags

LCD control commands

L enable LCD
I disable LCD

V verbose serial port responses
v short response codes
AVID ID READY == A
LOW Battery == B
LOOKING == L
SCAN STOPPED == S (note that this was NO ID FOUND)
N == N (no id in buffer)

D enter normal display mode: AVID123*234*455
d enter abbreviated display mode: A123234455

W echo the following characters to LCD until <cr> is sent

***Note:** Use of the 'W' command shuts the coil down.

Q enter quiet mode (no unsolicited RS232 traffic)
q normal mode

***Note:** The reader will echo serial commands that it understands and will not

echo commands that it does not understand. If the reader is not echoing your commands then it is NOT understanding them!!!

4.2 Software Support

The AVID Industrial Reader comes with a CD copy of the AVID Reader Wedge software.

5.1 Specifications:

- Operating Frequency: 125 kHz
- Battery Supply: 12 Volt rechargeable car or motorcycle battery
- FCC Information: FCC ID: IOL-125-AV1015 - 6" Coil System
FCC ID: IOL-125-AV1016 - 12" Coil System
FCC ID: IOL-125-AV1017 - 24" Coil System
- AC Power Adapter: U.S.: input 110 volts, 60Hz - output 15-18volts
Europe: input 220 volts, 50Hz - " "
- Display: 16 character X 1 Line LCD Display (Optional)
- Operating Temperature: 0° to 50°C (32° to 122°F)
- Storage Temperature: -20° to 65°C (-4° to 149°F)

5.2 Read Distances

Reading distances will vary depending on the size of the antenna and transponder tag that is used.

5.3 FCC Information

- FCC ID: IOL-125-AV1015 - 6" Coil System
- FCC ID: IOL-125-AV1016 - 12" Coil System
- FCC ID: IOL-125-AV1017 - 24" Coil System

6. Warranty Service

The AVID Industrial Reader is warranted against defects in material and workmanship, under normal use and service, for a period of 1 year from the date of shipment from AVID. This warranty will not apply if repairs, parts or adjustments are required due to accident, neglect, damage during transportation, or causes other than ordinary use. AVID’s sole responsibility under this warranty shall be, at AVID’s option, to either repair or replace any product, which fails during the warranty period. In no event shall AVID be liable for any indirect or consequential damages or loss of profits.

A **Return Material Authorization (RMA)** number must be issued before a unit is returned to AVID for service. Contact AVID for a **RMA** number or other service questions. (951) 371-7505.